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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,878	11/13/2003	Sidney B. Rigg	108298742US	1111
25096	7590	07/21/2005	EXAMINER	
PERKINS COIE LLP			WEISS, HOWARD	
PATENT-SEA			ART UNIT	
P.O. BOX 1247			2814	
SEATTLE, WA 98111-1247			PAPER NUMBER	

DATE MAILED: 07/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/713,878

Applicant(s)

RIGG ET AL.

Examiner

Howard Weiss

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 ~~is~~ are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 ~~is~~ are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0605</u> | 6) <input type="checkbox"/> Other: _____ |

Attorney's Docket Number: 108298742US

Filing Date: 11/13/05

Continuing Data: none

Claimed Foreign Priority Date: none

Applicant(s): Rigg et al. (Watkins, Kirby, Benson, Akram)

Examiner: Howard Weiss

Election/Restrictions

1. Applicant's election without traverse of the Group II invention, Claims 1 to 30, in the reply filed on 5/18/05 is acknowledged.
2. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1 to 3, 5, 6, 9, 10, 13 to 18, 21, 23 to 26, 29 and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Mashino et al. (U.S. Patent No. 6,703,310).

Mashino et al. show all aspects of the instant invention (e.g. Figures 1 to 7) including:

- ❖ Forming a bond-pad **203** on a die **201** said bond-pad electrically coupled to integrated circuits **202**
- ❖ Forming a redistribution layer **205** on said die including a conductive line having an attached end **211** to said bond pad and a second end portion **211X**
- ❖ etching a hole **208** through the first end and bond-pad
- ❖ forming a passage **212** through the die, bond-pad and first end using a laser
- ❖ cleaning the passage and then applying a passivation layer **209**
- ❖ depositing a Ni layer **213** and then an electrically conductive material **217** which extends through the bond-pad
- ❖ attaching solder balls **210**

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order

for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 4, 7, 8, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mashino et al. and Heymer et al. (U.S. Patent No. 3,345,134).

Mashino et al. show most aspects of the instant invention (Paragraph 5) except for applying TiCl_4 TiN before depositing the Ni layer. The Examiner notes the TiN is a well known barrier layer to prevent diffusion of contaminants from the substrate to combine with conductive layers such as Ni. Heymer et al. teach (Column 7 Lines 42 to 47) that TiCl_4 TiN is deposited when applying TiN to a semiconductor device. It would have been obvious to a person of ordinary skill in the art at the time of invention to apply TiCl_4 TiN before the Ni layer as taught by Heymer et al. in the process of Mashino et al. to prevent diffusion of contaminants from the substrate to combine with conductive layers such as Ni.

8. Claims 11, 12, 22, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mashino et al. and Hanaoka et al. (U.S. Patent No. 6,667,551).

Mashino et al. show most aspects of the instant invention (Paragraph 5) except for filling the hole with a passivation material. Hanaoka et al. teach (e.g. Figure 2C) to fill a hole **26** in a bond pad **14** with passivation material **28** to form highly reliable electrical connections (Column 1 Lines 28 to 32). It would have been obvious to a person of ordinary skill in the art at the time of invention to fill a hole in a bond pad with passivation material as taught by Hanaoka et al. in the process of Mashino et al. to form highly reliable electrical connections.

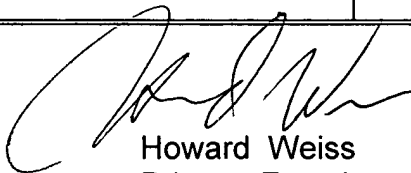
Conclusion

9. Paper copies of cited U.S. patents and U.S. patent application publications will cease to be mailed to applicants with Office actions as of June 2004. Paper copies of foreign patents and non-patent literature will continue to be included with office actions. These cited U.S. patents and patent application publications are available for download via the Office's PAIR. As an alternate source, all U.S. patents and patent application publications are available on the USPTO web site (www.uspto.gov), from the Office of Public Records and from commercial sources. Applicants are referred to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 for information on this policy. Requests to restart a period for response due to a missing U.S. patent or patent application publications will not be granted.
10. Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2814 Fax Center number is **(571) 273-8300**. The Art Unit 2814 Fax Center is to be used only for papers related to Art Unit 2814 applications.
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Howard Weiss at **(571) 272-1720** and between the hours of 7:00 AM to 3:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via Howard.Weiss@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy, can be reached on **(571) 272-1705**.

12. The following list is the Examiner's field of search for the present Office Action:

Field of Search	Date
U.S. Class / Subclass(es): 438/ 632, 667	7/20/05
Other Documentation: PLUS Analysis Report	7/12/05
Electronic Database(s): EAST	7/20/05

HW/hw
20 July 2005


Howard Weiss
Primary Examiner
Art Unit 2814